Cerebral Palsy ALLIANCE

CP Research News

Monday 18 July 2011

Interventions

1. J Pediatr Rehabil Med. 2011 Jan 1;4(1):3-12.

The GMFM, PEDI, and CP-QOL and perspectives on functioning from children with CP, parents, and medical professionals.

Vargus-Adams JN, Martin LK, Maignan SH, Klein AC, Salisbury S.

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Objective: Many outcome measures assess function of children with cerebral palsy (CP), but establishing meaningful clinical change remains challenging. This study explored correlations between subjective status ratings in several functional domains, made by children, parents, and medical professionals. The ratings were compared with three outcome measures in preparation for longitudinal work to establish minimal clinically important change. Method: Children were assessed with the Gross Motor Function Measure (GMFM), Pediatric Evaluation of Disability Inventory (PEDI), and Cerebral Palsy Quality of Life Questionnaire for Children (CP-QOL). Respondents provided Likert scale and Linear Analogue Scale ratings of gross motor function, self care, social function, quality of life, and overall function. Correlations were calculated for outcome measure scores and ratings. Results: 122 children with CP across all GMFCS and MACS levels, 79 male, aged 8.1 ± 2.9 years generated status ratings by 27 child reports, 122 parent reports, and 110 medical professional reports. Most ratings were moderately to highly correlated between parents and medical professionals. Outcome measure scores were frequently significantly correlated with pertinent ratings from medical professionals and parents but usually not with child ratings. Conclusions: Parents and medical professionals have similar perceptions of gross motor, self-care, quality of life, and overall status for children with CP and these perceptions correlate with standard outcome measures, but often do not agree with children's ratings. Longitudinal use of subjective status ratings from parents and professionals should contribute to establishing minimal clinically important differences for CP outcome measures.

PMID: 21757805 [PubMed - in process]

2. Res Dev Disabil. 2011 Jul 12. [Epub ahead of print]

A clinical tool to measure trunk control in children with cerebral palsy: The Trunk Control Measurement Scale.

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gium.

In this study the psychometric properties of the Trunk Control Measurement Scale (TCMS) in children with cerebral palsy (CP) were examined. Twenty-six children with spastic CP (mean age 11 years 3 months, range 8-15 years; Gross Motor Function Classification System level I n=11, level II n=5, level III n=10) were included in this study. To determine the discriminant ability of the TCMS, 30 typically developing (TD) children (mean age 10 years 6 months, range 8-15 years) were also included. For inter-rater reliability, two testers scored all children simultaneously. To determine test-retest reliability, participants were reassessed on a second test occasion. For construct validity, the Gross Motor Function Measure (GMFM) was administered. Intraclass correlation coefficients (ICC) ranged from 0.91 to 0.99 for inter-rater and test-retest reliability. Kappa and weighted kappa values ranged for all but one item from 0.45 to 1. The standard error of measurement was 2.9% and 3.4%, and the smallest detectable difference for repeated measurements was 8% and 9.43% between raters and test-retest, respectively. Cronbach's alpha coefficients ranged from 0.82 to 0.94. Spearman rank correlation with the GMFM was 0.88 and increasing coefficients were found from dimension B to E. Subscale and total TCMS scores showed significant differences between children with CP and TD children ($p<0.0001$). The results support the reliability and validity of the TCMS in children with spastic CP. The scale gives insight into the strengths and weaknesses of the child's trunk performance and therefore can have valuable clinical use.

PMID: 21757321 [PubMed - as supplied by publisher]

3. Occup Ther Int. 2011 Jul 12. doi: 10.1002/oti.321. [Epub ahead of print]

The Pirate Group Intervention Protocol: Description and a Case Report of a Modified Constraint-induced Movement Therapy Combined with Bimanual Training for Young Children with Unilateral Spastic Cerebral Palsy.

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The purpose of this article was to describe a child-friendly modified constraint-induced movement therapy protocol that is combined with goal-directed task-specific bimanual training (mCIMT-BiT). This detailed description elucidates the approach and supports various research reports. This protocol is used in a Pirate play group setting and aims to extend bimanual skills in play and self-care activities for children with cerebral palsy and unilateral spastic paresis of the upper limb. To illustrate the content and course of treatment and its effect, a case report of a two-year-old boy is presented. After the eight-week mCIMT-BiT intervention, the child improved the capacity of his affected arm and hand in both quantitative and qualitative terms and his bimanual performance in daily life as assessed by the Assisting Hand Assessment, ABILHAND-Kids, Video Observations Aarts and Aarts Module Determine Developmental Disregard, Canadian Occupational Performance Measure and Goal Attainment Scaling. It is argued that improvement of affected upper-limb capacity in a test situation may be achieved and retained relatively easily, but it may take a lot more training to stabilize the results and automate motor control of the upper limb. Future studies with groups of children should elaborate on these intensity and generalization issues. Copyright © 2011 John Wiley & Sons, Ltd.

PMID: 21751275 [PubMed - as supplied by publisher]

4. BMC Musculoskelet Disord. 2011 Jul 10;12(1):155. [Epub ahead of print]

Reliability of goniometric measurements in children with cerebral palsy: A comparative analysis of universal goniometer and electronic inclinometer. A pilot study.

Herrero P, Carrera P, Garcia E, Gomez-Trullen EM, Olivan-Blazquez B.

BACKGROUND: Even though technological progress has provided us with more and more sophisticated equipment for making goniometric measurements, the most commonly used clinical tools are still the universal goniometer and, to a lesser extent, the inclinometer. There is, however, no published study so far that uses an inclinometer for measurements in children with cerebral palsy (CP). The objective of this study was two-fold: to independently assess the intra and inter-examiner reliability for measuring the hip abduction range of motion in children with CP using two different instruments, the universal two-axis goniometer and electronic inclinometer. A pool of 5 examiners with different levels of experience as paediatric physiotherapists were used. The study did not include a comparison between both instruments because the measurement procedure and the hip position were different for each.
METHODS: Prospective, observational study. The goniometer study was carried out with 14 lower extremities of 7 children with spastic CP. The inclinometer study was carried out with 8 lower extremities of 4 children with spastic CP. This study was divided into two independent parts: a study of the reliability of the hip abduction range of motion measured with a universal goniometer (hip at 0 degrees) and with an electronic inclinometer (hip at 90 degrees). The Intraclass Correlation Coefficient (ICC) was calculated to analyse intra and inter-examiner agreement for each instrument. RESULTS: For the goniometer, the intra-examiner reliability was excellent (>0.80), while the inter-examiner reliability was low (0.375 and 0.475). For the inclinometer, both the intra-examiner (0.850-0.975) and inter-examiner reliability were excellent (0.965 and 0.979).
CONCLUSIONS: The inter-examiner reliability for goniometric measurement of hip abduction in children with CP was low, in keeping with other results found in previous publications. The inclinometer has proved to be a highly reliable tool for measuring the hip abduction range of motion in children with CP, which opens up new possibilities in this field, despite having some usage limitations.

PMID: 21740600 [PubMed - as supplied by publisher]

5. Complement Ther Clin Pract. 2011 Aug;17(3):127-31. Epub 2010 Dec 15.

Massage therapy in post-operative rehabilitation of children and adolescents with cerebral palsy - a pilot study.

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AIM: The purpose of this pilot study was to explore the use of massage therapy in children with cerebral palsy undergoing post-operative rehabilitation. MATERIAL AND METHOD: Three participants were randomized to massage therapy and another three participants to rest. All children had undergone surgery in one or two lower limbs. Pain, wellbeing, sleep quality, heart rate and qualitative data were collected for each child. RESULTS: The scores of pain intensity and discomfort were low in all participants. Heart rate decreased in participants who were randomized to rest, but no change was found in the massage therapy group. CONCLUSIONS: The lack of decrease in heart rate in the study group of massage therapy may imply an increased sensitivity to touch in the post-operative setting. Further research with larger study populations are needed to evaluate how and when massage therapy is useful for children with cerebral palsy.

PMID: 21742276 [PubMed - in process]

6. Muscle Nerve. 2011 Mar 16. doi: 10.1002/mus.22098. [Epub ahead of print]

Tibialis anterior architecture, strength, and gait in individuals with cerebral palsy.

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Introduction: The relationship of tibialis anterior (TA) muscle architecture, including muscle thickness (MT), cross-sectional area (CSA), pennation angle (PA), and fascicle length (FL), to strength and ankle function was examined

in ambulatory individuals with CP and unilateral foot drop. Methods: Twenty individuals with CP participated in muscle ultrasound imaging, unilateral strength testing, and three-dimensional gait analysis. Results: Muscle size (MT and CSA) was positively related to strength, fast gait velocity, and ankle kinematics during walking. Higher PA was related to a more dorsiflexed ankle position at initial contact and inversely with fast gait velocity. FL was related to strength, fast velocity, and step length at a self-selected speed. Conclusions: Muscle architecture partially explains the degree of impairment in strength and ankle function in CP. Treatments to increase TA size and strength may produce some gait improvement, but other factors that may contribute to ankle performance deficits must be considered. Muscle Nerve, 2011.

PMID: 21755515 [PubMed - as supplied by publisher]

7. Neurocirugia (Astur). 2011 Jun;22(3):245-250.

Combined Anterior-Posterior arthrodesis en patient with athetoid cerebral palsy who developed spondylotic cervical mielopathy. Case Report and review of literature. [Article in Spanish]

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Spondylotic cervical mielopathy is a common complication in young patients with Cerebral Child Palsy with an important dystonic and athetoid component. Its surgical treatment is a challenge, due to elevate incidence of early faliure of the arthrodesis, both in anterior and posterior approaches. We report an historical review about the treatment of cervical mielopathy in this subgroup of patients and a clinical case in which we decided to realize decompression and arthtrodesis by a combined anterior and posterior approach, with lateral-mass screw placement, using botulinium toxin injections in the postoperative period, achieving a good clinical outcome.

PMID: 21743945 [PubMed - as supplied by publisher] Free full text

8. Med Oral Patol Oral Cir Bucal. 2011 Jul 15. [Epub ahead of print]

Clinical-therapeutic management of drooling: Review and update.

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Drooling is the uncontrolled leakage of saliva outside the mouth, generally as a result of difficulty in swallowing the saliva produced. Many factors contribute to drooling, though it is more commonly seen in children with brain paralysis - particularly those receiving anticonvulsivant medication. Drooling is also often seen in patients with lip sealing problems or malocclusions such as anterior open bite. Clinically, the affected patients can develop skin irritation or abrasions, problems of hygiene, unpleasant smell and - in the more severe presentations - the need to wear protectors or frequently change clothing. Treatment of this disorder is complex, and should be addressed from a multidisciplinary perspective, with planning on an individualized basis. Among the different existing managements, myofunctional therapy, behavioral change programs and drug treatments are the most widely used options, though there are also more invasive surgical techniques designed to reduce or cause submandibular saliva secretion to be rerouted towards posterior zones of the oral cavity. In any case, no scientific evidence-based management protocol has yet been established capable of affording favorable results in the majority of cases. The present study offers a review and update on the clinical and dental management aspects of drooling.

PMID: 21743406 [PubMed - as supplied by publisher]

9. Brain Nerve. 2011 Jul;63(7):785-794.

Clinical Application of Botulinum Toxin. [Article in Japanese]

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The clinical application of botulinum toxin (BoNT) was first proposed by Justinus Kerner in 1822. BoNT was formally accepted as a therapeutic agent in the 1970s, and currently, it is used worldwide for treating diseases as well as for cosmetic conditions. In Japan, Botox^R is the only type A formulation that has been officially approved for the treatment of blepharospasm, hemifacial spasm, cervical dystonia, pes equinus of cerebral palsy, adult spasticity of upper and lower limbs, and Botox Vista^R is applied for glabellar frown lines. Its effect is symptomatic, but long-lasting remission is noted after treatment in more than 30% of cases with cervical dystonia. Ultrasound guidance is useful and may be even superior to electromyographic monitoring, especially when the obliquus capitis inferior muscle is targeted in rotatocollis, because the vertebral artery or upper cervical nerve root(s) may be injured when the needle penetrates the muscle. BoNT alleviates pain or glandular secretion besides causing a neuromuscular block. After being transported to the axons, BoNT is carried centrally and even to the adjacent neurons via synapses (toxin jump). A direct central action has also been postulated. BoNT is generally safe, but serious adverse reactions may occur very rarely. Individual differences in toxin sensitivity may be considerably greater than assumed, and even the routine clinical dose may be too high in some patients. The future strategy includes clinical application of other types of toxin or chimera toxins, or the use of the toxin as a cargo ("Trojan Horse") carrying some bioactive molecules into the cell. A non-injection procedure for mucosal application or cosmetic use is currently under clinical trials.

PMID: 21747149 [PubMed - as supplied by publisher]

10. Eur J Paediatr Neurol. 2011 Jul 9. [Epub ahead of print]

A French observational study of botulinum toxin use in the management of children with cerebral palsy: BOTULOSCOPE.

Chaléat-Valayer E, Parratte B, Colin C, Denis A, Oudin S, Bérard C, Bernard JC, Bourg V, Deleplanque B, Dulieu I, Evrard P, Filipetti P, Flurin V, Gallien P, Héron-Long B, Hodgkinson I, Husson I, Jaisson-Hot I, Maupas E, Meurin F, Monnier G, Pérennou D, Pialoux B, Quentin V, Moreau MS, Schneider M, Yelnik A, Marque P.

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BACKGROUND: Dystonia and spasticity are common symptoms in children with Cerebral Palsy (CP), whose management is a challenge to overcome in order to enable the harmonized development of motor function during growth. AIM: To describe botulinum toxin A (BTX-A) use and efficacy as a treatment of focal spasticity in CP children in France. METHODS: This prospective observational study included 282 CP children mostly administered according to French standards with BTX-A in lower limbs. Realistic therapeutic objectives were set with parents and children together before treatment initiation and assessed using the Visual Analogue Scale (VAS). Child management was recorded and the efficacy of injections was assessed during a 12-month follow-up period by physicians (Modified Ashworth Scale, joint range of motion, Physician Rating Scale, Gillette Functional Assessment Questionnaire and Gross Motor Function Measure-66) and by patients/parents (Visual Analogue Scale). RESULTS: BTX-A treatment was administered in different muscle localizations at once and at doses higher than those recommended by the French Health Authorities. Children were treated in parallel by physiotherapy, casts and ortheses. Injections reduced spasticity and improved joint range of motion, gait pattern and movement capacity. Pain was reduced after injections. BTX-A administration was safe: no botulism-like case was reported. The log of injected children who were not included in the study suggested that a large population could benefit from BTX-A management. CONCLUSIONS: We showed here the major input of BTX-A injections in the management of spasticity in CP children. The results are in favor of the use of BTX-A as conservative safe and efficient treatment of spasticity in children, which enables functional improvement as well as pain relief.

PMID: 21745754 [PubMed - as supplied by publisher]

11. Dev Med Child Neurol. 2011 Jul 14. doi: 10.1111/j.1469-8749.2011.04031.x. [Epub ahead of print]

Influence of percutaneous endoscopic gastrostomy on gastro-oesophageal reflux evaluated by multiple intraluminal impedance in children with neurological impairment.

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Aim: The aim of the study was to estimate the influence of percutaneous endoscopic gastrostomy (PEG) placement on gastro-oesophageal reflux (GOR) by using multiple intraluminal impedance (MII/pH) measurements in children with neurological impairments. Method: Fifteen children with neurological impairments (cerebral palsy, n=10; cerebroidolipofuscinosis, n=2; Aicardi syndrome, n=1; and secondary encephalopathy, n=2) were investigated (interquartile range [IQR] 6y 4mo-14y 8mo; median age 10y 2mo; eight male, seven female). Individuals with nutritional disorders that could not be corrected by physiological means or with swallowing disorders that either caused chronic respiratory symptoms or prevented food intake were included in the study. The exclusion criteria included previous major abdominal surgery and a lack of consent for PEG. Participants underwent MII/pH for a 24-hour period and had an oesophagogastroduodenoscopy before PEG placement, which was repeated 6 to 8 months later. Results: At baseline, GOR was detected in 6 of the 15 participants, and the second MII/pH session revealed GOR in 2 of the 15 children. Differences between quantitative GOR indices obtained before and after PEG were not statistically significant, except for the proportion of the acidic/weakly acidic reflux events - among all participants in the first examination, 159 reflux episodes were acidic and 244 were weakly acidic, while in the follow-up recordings the proportion was inverted (244 acidic, 136 weakly acidic; $\chi(2) = 47.0$; $p<0.001$). Baseline endoscopy did not reveal any macroscopic changes in any of the examined individuals, but the follow-up examination revealed oesophagitis in two participants. The median body weight gain after 6 months as 22.0% (IQR 14.4-29.2%). All participants tolerated PEG feeding well, regardless of MII/pH results. Interpretation: Identification of GOR based on MII/pH in children with neurological impairments does not exclude a good clinical response to PEG feeding.

PMID: 21752017 [PubMed - as supplied by publisher]

Epidemiology / Aetiology / Diagnosis & Early Treatment / Surveillance

12. Child Care Health Dev. 2011 Jul 13. doi: 10.1111/j.1365-2214.2011.01280.x. [Epub ahead of print]

Cerebral palsy registers and high-quality data: an evaluation of completeness of the 4Child register using capture-recapture techniques.

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Background: As the survival of very preterm and low-birthweight infants increases, so does the importance of monitoring the birth prevalence of childhood impairments; disease registers provide a means to do so for these rare conditions. High levels of ascertainment for disease research registers have become increasingly difficult to achieve in the face of additional challenges posed by consent and confidentiality issues. 4Child - Four Counties Database of Cerebral Palsy, Vision Loss and Hearing Loss in Children has been collecting data and monitoring these three major childhood impairments since 1984. Methods: This study used capture-recapture and related techniques to identify areas which are particularly affected by low ascertainment, to estimate the magnitude of missing cases on the 4Child register and to provide birth prevalence estimates of cerebral palsy which allow for these missing cases. Results: Estimates suggest that while overall around 27% of cerebral palsy cases were not reported to 4Child, ascertainment for severely motor-impaired children (93% complete) and those born in two of the four counties was good (Oxfordshire: 90%, Northamptonshire: 94%). After allowing for missing cases, adjusted estimates of cerebral palsy

birth prevalence for 1984-1993 were 3.0 per 1000 live births versus 2.5 per 1000 live births in 1994-2003. Conclusions: Capture-recapture techniques can identify areas of poor ascertainment and add to information around the provision of cerebral palsy birth prevalence estimates. Despite variation in ascertainment over time, capture-recapture estimates supported a decline in cerebral palsy birth prevalence between the earlier and later study periods in the four English counties of the geographical area covered by 4Child.

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13. Dev Med Child Neurol. 2011 Jul 14. doi: 10.1111/j.1469-8749.2011.04039.x. [Epub ahead of print]

Rates of cerebral palsy in Victoria, Australia, 1970 to 2004: has there been a change?

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Aim: The aim of this study was to assess overall and gestational age-specific trends in the rate of cerebral palsy (CP) in Victoria, Australia, and to compare these findings with other population data. Method: Individuals born in Victoria from 1970 to 2004 with non-postneonatally acquired CP were identified from a population register; 3491 were included in the study (1963 males, 1528 females). After a literature review, comparison data were extracted from publications using previously devised inclusion criteria. Rates were calculated per 1000 live births for all CP and by gestational age group: these were tabulated and plotted by year of birth. Results: Data from nine registries, including the Victorian register, showed an increase in the rates of CP over the 1970s and 1980s, consistently seen in extremely preterm (<28wks) survivors but also in those born at term (≥37wks). Since the early 1990s, CP rates either stabilized or decreased, particularly for children born extremely preterm. Interpretation: Increases in the rates of CP during the 1970s and 1980s are in part because of the increasing survival of extremely preterm infants that occurred without a concomitant improvement in neurological outcomes. Evidence from population samples now suggests that this trend has been reversed since the mid- to late 1990s.

PMID: 21752018 [PubMed - as supplied by publisher]

14. Dev Med Child Neurol. 2011 Jul 14. doi: 10.1111/j.1469-8749.2011.04072.x. [Epub ahead of print]

Cerebral palsy - patterns and patchwork.

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PMID: 21752022 [PubMed - as supplied by publisher]

15. Dev Med Child Neurol. 2011 Jul 11. doi: 10.1111/j.1469-8749.2011.04047.x. [Epub ahead of print]

Survival of children and young people with cerebral palsy.

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PMID: 21745201 [PubMed - as supplied by publisher]

16. Dev Med Child Neurol. 2011 Jul 11. doi: 10.1111/j.1469-8749.2011.04027.x. [Epub ahead of print]

Survival at 19 years of age in a total population of children and young people with cerebral palsy.

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Aim: The aims were to investigate survival of children with cerebral palsy (CP) and to search for modifiable factors that influence survival in CP. Method: The total population of children with CP in southern Sweden born between 1990 and 2005, and followed from 1994 to 2010 comprised 718 children. The study included 708 of these children (297 females, 411 males) participating in a secondary prevention programme. CP subtype, Gross Motor Function Classification System (GMFCS) levels, and comorbidities were described. Kaplan-Meier survival curves were plotted. The following factors were investigated using Cox regression analysis: GMFCS level (co-varies with overall health), size of health care catchment area, gastrostomy feeding, and sex. Results: The estimated survival at 19 years of age was 60% in children with the most severe gross motor limitations (GMFCS level V). Death occurred throughout childhood. All children at GMFCS level I or II, and 96% of the whole CP population, survived. The mortality risk in childhood CP was three times higher in catchment areas that covered small populations than in areas with a large population. Gastrostomy feeding was associated with a ninefold increased risk of dying, regardless of GMFCS level and catchment area. Interpretation: Fragile children with CP, as indicated by GMFCS level V and gastrostomy feeding, had the lowest chance of surviving childhood. Health care catchment area seemed to influence survival rate.

PMID: 21745199 [PubMed - as supplied by publisher]

17. Pediatr Int. 2011 Jul 13. doi: 10.1111/j.1442-200X.2011.03424.x. [Epub ahead of print]

Neonatal correlates of adverse outcomes in very low birth weight infants in NICU-Network.

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Objectives. To explore the relationships among neonatal morbidities, interventions and death or adverse neurodevelopmental outcomes in very low birth weight (VLBW) infants. Methods. Subjects were infants with birth weight ≤1500g and cared for in the tertiary neonatal intensive care units in Japan. Multiple logistic regression analyses were performed to examine the odds ratios (ORs) and 95% confidence intervals (CIs) of neonatal factors for death or cerebral palsy (CP) and death or developmental delay (developmental quotient <70 or delay judged by physicians) at 3 years of age after adjusting for biological and prenatal variables. Results. Of the 3104 study population, 257 died and 1826 were evaluated at 3 years of age. Cystic periventricular leukomalacia (PVL) (OR:23.9; 95% CI:11.0-51.7), gastrointestinal perforation (OR: 8.5; 95%CI:2.8-25.4), intraventricular hemorrhage (IVH) grade 3 or 4 (OR:3.1; 95%CI:1.3-7.2) and sepsis (OR:2.6; 95%CI:1.4-4.8) were neonatal factors significantly associated with an increased risk of death or CP. Significant correlates with death or developmental delay were cystic PVL (OR:7.9; 95%CI:3.7-16.8), gastrointestinal perforation (OR:6.3; 95%CI:1.9-20.8), sepsis (OR: 2.8; 95%CI: 1.6-4.8), IVH grade 3 or 4 (OR:2.6; 95%CI:1.2-5.7), chronic lung disease at 36 weeks of corrected gestational age (OR:1.6; 95% CI: 1.1-2.4) and treatment for retinopathy of prematurity (ROP) (OR:1.5; 95%CI:1.0-2.3) . Conclusion. Cystic PVL, gastrointestinal perforation, IVH and sepsis correlated to both death or CP and death or developmental delay in VLBW infants. Chronic lung disease at 36 weeks and treatment for ROP were associated with death or develop-

mental delay, but not with death or CP.

PMID: 21752150 [PubMed - as supplied by publisher]

18. Dev Neurosci. 2011 Jul 8. [Epub ahead of print]

Involvement of Neuronal Nitric Oxide Synthase in Ongoing Fetal Brain Injury following Near-Term Rabbit Hypoxia-Ischemia.

Rao S, Lin Z, Drobyshevsky A, Chen L, Ji X, Ji H, Yang Y, Yu L, Derrick M, Silverman RB, Tan S.

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Neuronal nitric oxide synthase (nNOS) and nitric oxide (NO) are implicated in neuronal injury following acute hypoxia-ischemia (HI). Our hypothesis was that NO from nNOS is responsible for ongoing mitochondrial dysfunction in near-term fetal HI. Recently, we synthesized new selective nNOS inhibitors that prevent the cerebral palsy phenotype in our animal model. We tested the efficacy of a selective nNOS inhibitor (JI-8) in fetal brains after in utero HI in our rabbit model. Brain slices at 29 days gestation were obtained after in utero HI, and immediately cultured in medium containing JI-8 or saline for 3-6 days. Mitochondrial membrane integrity and function were determined by flow cytometry using rhodamine 123 and JC-1, and cell death by using propidium iodide. JI-8 decreased NO production in brain slices and also showed significant preservation of mitochondrial function at both 3 and 6 days ($p < 0.05$) when compared with saline and inducible NOS inhibitor 1400W. There was no difference in cell death. In conclusion, nNOS is involved in ongoing mitochondrial dysfunction after in utero HI. The subacute brain slice model could be a tool for studying the mechanisms involved in ongoing neuronal injury, and for rapidly assessing potential neuroprotectants.

PMID: 21757865 [PubMed - as supplied by publisher]

19. Dev Med Child Neurol. 2011 Jun;53(6):482. doi: 10.1111/j.1469-8749.2011.03948.x. Epub 2011 Apr 20.

Neuroimaging: connecting the pixels.

Hoon AH Jr, Stashinko EE.

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Comment on

Dev Med Child Neurol. 2011 Jun;53(6):516-21.

PMID: 21506996 [PubMed - indexed for MEDLINE]

20. J Formos Med Assoc. 2011 Jun;110(6):388-96.

Epidemiological study of hospitalization associated with respiratory syncytial virus infection in taiwanese children between 2004 and 2007.

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BACKGROUND/PURPOSE: Respiratory Syncytial Virus (RSV) is the leading cause of hospitalization in young children. The population-based burden of RSV hospitalization and the effect of potential risk factors on the severity of illness were evaluated in Taiwanese children. METHODS: We analyzed the annual population-based incidence, underlying diseases and characteristics of hospitalizations due to RSV in Taiwanese children under 5 years of age from 2004 to 2007 by using Taiwan's National Health Insurance database. RESULTS: A total of 11,081 children with RSV-associated hospitalization were studied. Average annual population-based hospitalization incidence was 1,077 and 232 per 100,000 children-year in children under 6 months and under 5 years of age, respectively. The peak incidence occurred between 1 and 2 months of age. The male-to-female incidence risk ratio was 1.4:1 ($p < 0.001$). There was a significant seasonal distribution with consistent peaks in the spring and autumn every year ($p < 0.001$). A total of 373 patients (3.3%) had repeated RSV infection. The 943 children (8.5%) with underlying diseases were older ($p = 0.001$), required longer intensive care unit (ICU) stays ($p < 0.001$), had a higher rate of endotracheal intubation ($p < 0.05$), and incurred higher medical costs ($p < 0.001$). A total of 888 patients (8%) required ICU care. Younger age ($p < 0.001$), prematurity ($p < 0.001$), cerebral palsy ($p < 0.001$) and congenital heart disease ($p < 0.001$) were independent predictors of requiring ICU care. CONCLUSION: RSV infection occurs biennially with peaks in spring and fall in Taiwan. Patients with underlying diseases need longer hospital and ICU stays and incur higher medical costs. Younger age, prematurity, congenital heart disease and cerebral palsy are predictors of ICU care.

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[Polymicrogyria: epidemiology, neurological and anatomical factors and clinical outcome in a series of 34 cases. [Article in Spanish]

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INTRODUCTION: The aim of our study is to describe the epidemiology, clinical evolution, and the anatomical and neurological factors involved in polymicrogyria in 34 patients with this disorder. SUBJECTS AND METHODS: We have compiled 34 patients diagnosed and/or in follow-up at the Department of Paediatric Neurology of the Hospital Infantil Niño Jesús between 1995 and 2010. All the patients had a magnetic resonance imaging suggestive of polymicrogyria, and most of the patients still have periodic checks, thus their outcome is known. RESULTS: The large majority were male (76.5%). The median age at presentation was 10 months; the reason for the study was psychomotor or mental delay (44%) followed by seizures (38.2%). During the condition patients presented with epilepsy (61.7%), infantile cerebral palsy (47%), psychomotor/mental retardation (94.1%), pervasive developmental disorder (26.4%), behavioural disturbances (38.2%), neurosensory deficit (35.2%) and microcephaly 67.6%. In 82.3% of patients there was bilateral involvement (42.8% perisylvian). Other abnormalities were observed in the MRI of 58.8% of patients. The electroencephalogram at diagnosis showed changes in 41.1%, and this rose to 67.6% during follow-up. 61.7% received antiepileptic treatment was received by 61.7% of patients, with 52.3% requiring ≥2 drugs. Epilepsy surgery was performed on two patients. Some type of sequelae was observed in 91.1% of patients. The aetiology was unknown in 61.7%; a congenital infection was suspected in 10 patients and syndromic or polymalformative disorder in three patients. CONCLUSIONS: This study shows the range of clinical and radiological expression in polymicrogyria, in addition to the possibilities for the future in terms of determining the aetiology of this pathology.

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